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ABSTRACT

A one-year pilot program at five videoconferencing learning centers addressed the use of videoconferencing as an effective instructional delivery model in distance education for post secondary teacher education. The need to offer teachers increased continuing educational opportunities has placed a significant demand on university training programs to offer additional courses to meet their needs. The pilot program focused on the collaborative design and development of a distance learning network delivering seven university classes. Factors that contributed to the success of the pilot program include: the use of videoconferencing; pre-planning, training, and facilitation of individuals involved in the delivery of instruction; and the collaborative grassroots organization and support for the program. The program proved to be an effective means for delivering instructional content to remote areas of the region. Increased training for faculty, facilitators, and technologists must be provided and funded in order to continue the program. The use of videoconferencing requires extensive planning and human resources for instruction to be effective. Videoconferencing learning communities allow for educational opportunities previously denied. In addition, the varied use of videoconferencing provides additional opportunities for schools, communities, and governmental agencies to increase the viability of information and resources to remote locations. (Author/SWC)

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Distance Education: No Longer a Rural Domain

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Purpose

This paper is concerned with a one year pilot program which addressed the use of videoconferencing as an effective instructional delivery model in distance education for post secondary education. The pilot program focused on the collaborative design and development of a distance learning network. Although other forms of distance education are being used including open university, correspondence courses; satellite, ITFS(Instructional Television Fixed System-microwave), and email/www based courses, videoconferencing provides a two-way video and audio opportunity in real time for those academic areas that require an interactive learning environment. The research design consisted of a one year pilot program of five videoconferencing learning centers (VCLs) delivering seven university classes.

Background

The United States public school restructuring and reform movement has created a need to re-think the way in which children are schooled and teachers are trained. Teachers serving the educational needs of children are faced with the continuing need to upgrade credentials, re-certify, and in many instances transition to new educational responsibilities (Spooner & Johnson, 1996). University training programs that serve teachers are hard pressed to address changing federal and state accreditation standards and initiatives for serving all children. Inclusive schooling, National Education Goals and accreditation standards have necessitated the re-training of many of the nation's teachers

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to effectively serve children in a variety of classroom settings. The already crisis stage of recruitment and retention of teachers in special education adds to the lack of comprehensive personnel resources faced by many public schools, personnel preparation programs, institutions of higher education and state departments of education across the country. New and innovative means of reaching teachers through effective service delivery alternatives are required to meet the needs of teachers and their students for the 21st century (Churton, Paul, Greene, Smith, & Anderson, 1996).

It is clear that for the 21st Century:

1. Education will be the major public agenda item.
2. Education will continue to be viewed as the key to economic growth.
3. Technology will provide more opportunities for schooling, education and training, and employment.
4. The number of public school students will increase.
5. The attrition of aging teachers, class size policies and increased school enrollment will be major factors in increasing the number of needed teachers.
6. Supply of new teachers will meet less than 60% of the need.
7. Non-Traditional teacher training programs will develop.
8. Increase in core subjects such as math, science, and basic reading will occur.
9. Community and senior colleges will become major technological centers for training and learning.

The State of Florida continues to experience a significant growth in population, industry, and demand for a well-learned and skilled work and teacher corps. Distance learning for only rural and remote areas now includes urban locations as well. In addition, Goals 2000 goals for restructuring and enhancing education places an overwhelming burden on existing and overcrowded training programs. To address this demand, schools in Florida and across the nation are forced, to employ, under emergency certificates, a significant number of teachers who are certified in areas other than their teaching assignment. Emergency certificates allow teachers to be employed with the expressed condition that they complete at least six hours of course work per year to meet

certification, rectification, and other required standards such as ESOL (English as a Secondary Language).

The need to offer teachers increased educational opportunities has placed a significant demand on university training programs to offer additional courses for these teachers. With cutbacks in university budgets, a state with an antiquated tax structure and a rural to urban geographic region containing over 28% of the state's population, existing training programs can not meet the demand under traditional structures. Teachers, administrators, support personnel and others are facing termination due to the inability to receive the course work required to remain employed. School aged children are faced with teachers with partial competence thus placing them at risk for the 21st century. Currently, as verified by a need assessment conducted in January 1997, over 35% of our school work corps hold an emergency certificate and are in need of university classes and training. Personnel shortages are critical; however, access to appropriate services and life long learning remains the key factor in this increasing nation-wide problem.

Collaborative Grassroots Partnership

The Greater Tampa Bay Special Education Consortium (GTBSEC) is a partnership of five school districts and three campuses of the University of South Florida. Meeting the educational and community based needs lies in a collaborative and leadership role. Service delivery programs developed in isolation without viable input from the grassroots level will be short lived. The problems we face are insurmountable if conducted alone without the developmental input from our grassroots constituents, namely the schools! The relationship between university teacher training programs and the delivery of instructional services to teachers and children in schools is a pivotal issue

in the restructuring movement (Churton et. al., 1996). Successful school-university consortia, especially in times of limited fiscal resources, rely upon the perceived value of collaboration in improving the delivery of services and the commitments of the leaders in universities and in schools, to sustain them.

The region includes the USF campuses of Tampa, St. Petersburg, and Lakeland, Sarasota, and Fort Myers together with several private post-secondary universities in partnership with 5 school districts in the region. The GTBSEC serves in excess of 360,000 school aged children with over 68,000 children having disabilities, 5,000 special education teachers, and 35 special education faculty. A set of formal by-laws governs its operation. The GTBSEC employs a full time (12 month) director who works collaboratively with a multitude of university and district committees and interests concerned with school reform and restructuring activities.

Effective Network

The lack of access to campus based programs is a key factor in preventing teachers from gaining the classes needed for certification. Access is defined as time constraints due to distance, schedules, employment, and family commitments among others. Effective distance education can provide the access and the quality of instruction required by teachers (Daily, 1991). Of the technological systems available, including satellite, microwave, and one way audio telecommunication, the GTBSEC has developed an infrastructure that uses video compression codecs and algorithms. The selection of videoconferencing, centered on the advantages of interactive 2-way video/audio communication, which establishes a visual connection among and between all learners and the instructor. Since an instructor can hear and see remote learners in real time,

he/she can use small group, conversation, body language, and eye contact to enhance learning and communication. Interactive teaching strategies such as questioning techniques and small group discussions can also help engage and motivate learners by making them active participants in the learning process.

The selection of ISDN (integrated service data network) was directly associated with the costs of the services which is $40 per month per line. Long distance charges are with the state government rates. Remote learning sites are constructed with the same videoconferencing capabilities as the unit located at USF. Each site provides ancillary equipment such as conference telephone, fax and xerox machines, and a conference/classroom style room for videoconferencing. Using ISDN as the network and forming a 30-minute travel time circumference; teachers, support personnel, and administrators are able to receive graduate, undergraduate, certification, and special topic classes to meet local needs. In addition, schools will be better able to link themselves for core subjects such as math and science and for children to experience educational field trips otherwise unavailable due to costs and time constrictions.

Methods

Videoconferencing Learning Centers:

The network consists of five regional videoconferencing learning centers (VCLs). The intent of learning centers was to localize videoconferencing systems within the school and community. Each site is located at a public school centralized to the geographic region of that particular school district. Casey (1993) suggested that end users must be able to gain access to the system for training and opportunities other than direct teaching. The decision to place a system was predicated on the basis of local

individuals willing to be trained as facilitators and technologists, access to ISDN network, and basic hardware to augment the videoconferencing center. In addition, school sites offer relatively open space during evening hours and on weekends. A one-year pilot period was designed for each VCL that included the delivery of five university courses on a point to point format.

Each VCL serves as an origination or reception sites. The technology used consists of an ISDN network. The network uses PictureTel PCS 100E-3 units at 384kbps converted to group/classroom systems by using 35 inch televisions with scan converters, multiplexors, Canon VCC1 remote control preset cameras, and document cameras. Each school facility provides VCR-Laserdisc players, analog speaker phones, and fax/Xerox machines. Interoperability is compatible with other existing video compression units. The PCS 100 codec supports H.320 + voice activated and continuous presence, ISDN, Switched 56, V.35, and RS-499. The PCS 100E-3 can place 2 -6 channel calls and is a full-featured, full-color, full-motion videoconferencing system. The PCS 1000 supports full-duplex 7khz wideband audio, with echo cancellation. The software allows control over all aspects of video calling including audio/video settings, phone directories, diagnostics, on-screen menus. Because of the computer based system, data and application sharing with whiteboard, data transfer, powerpoint, file transfer and other instructional opportunities are available.

Instructor Training:

There were seven instructors who participated in the pilot program. Instructors were trained in a forty hour program consisting of basic technology and instructional design. Each instructor completed a two hour demonstration program under supervision.

Additional experiencial time was conducted by several of the instructors without supervision. During each class, instructors were assisted by a class facilitator at each location. During the pilot period, instructors were not required to control the technology; however, all did with varying degrees of control. At the completion of the training program, instructors were competent to:

- Know the basic operations including cable connections of the videoconferencing equipment.
    - PictureTel PCS 100/50
    - 32/35 inch color monitor
    - Cannon Vcc1 color camera
    - Document camera
- Be able to effectively use the PCS Live software by knowing the following:
    - Sizing and moving windows
    - Dialing and ending calls
    - Recalling video numbers from yellowpages and redial menu
    - Showing/hiding local video
    - Changing video inputs
    - Knowing the tool menu including
- Apply instructional design principles to videoconferencing
    - Active learning strategies
    - Electronic software presentations
    - Graphics and document cameras

Facilitator Training:

Individuals at each VCL were required to be trained in the basic operation of the technology and in assisting the instructor deliver course content. A minimum of two people were trained from each site with 8 people in total completing the training. Each person received 40 hours of supervised training including basic component connections and startup, ISDN operation and telephony, and basic instructional design to assist students and instructors. School based personnel served as facilitators and technologists. Responsibilities of facilitators includes:

- Meet with the instructor at least one week prior to the start of the class. Preferably two meeting sessions would be desired.

- Establish an email account.
- Bookmark the DIALS Web Site.
- Contact enrolled students in VLC area prior to start of class.
- Deliver basic assignment information, etc. to enrolled students prior to start of class.
- Assist students in establishing an email account.
- Assist students in logging on to Internet and receiving the Dials Web Site
- Physically arrangement classroom to instructors specifications/per sessions.
- Arrange for small groups, blackboard, flipcharts, etc.
- Distribute information received from instructor.
- Post materials receive from students to instructor.
- Clear any details prior to end of class and communicate to instructor.

Competencies related to the operation of the technology included:

- Know the basic operation of personal computers.
- Be able to use windows 95.
- Know the basic operations including cable connections of the videoconferencing equipment.
    - PictureTel PCS 100/50
    - 32/35 inch color monitor
    - Cannon Vcc1 color camera
    - Document camera
    - Ascend Imux
- Be able to power on all operating equipment.
- Be able to boot PCS Live if auto function fails.
- Be able to effectively use the PCS Live software by knowing the following:
    - Sizing and moving windows
    - Dialing and ending calls
    - Recalling video numbers from yellowpages and redial menu
    - Showing/hiding local video
    - Changing video inputs
    - Knowing the tool menu including:
        - Diagnostics
        - Preferences
- Be able to close PCS live following call or during technology glitches.
- Be able to use PCS Live Plus data sharing.
    - Whiteboard (basics and software presentations)
    - File transfers
- Be able to control camera with remote and establish presets.
  Be able to use the document camera with various objects

Data Collection and Instrumentation

Two measurements scales were used to ascertain the effectiveness of the pilot videoconferencing classes. A standard evaluation form was developed for administration to students in the videoconferencing classes. In addition, an instructor's self-evaluation

form was also administered. The student evaluation form and the instructor self-evaluation form attained a Cronbach's alpha reliability of .89 and .91, respectively. Both evaluation scales were accepted as viable measurements for the purposes intended.

Results

Due to the pilot design of this study, the results from each class were treated separately for three reasons: (1) class content was different, (2) students enrolled in classes for different professional reasons, and (3) scheduling of classes was varied. These three items are important considerations in determining effectiveness of distance education especially videoconferencing. For the purpose of this paper, evaluation results from two of the seven classes are reported. One class represents methods-based instruction; the second class represents a knowledge-based course. Results of the other five classes mirrored the results of the two classes presented. Raw score values for the seven class instructors are reported in table 3 and table 4.

A Likert scale of (4) Strongly Agree, (3) Agree, (2) Disagree, and (1) Strongly Disagree and Not Applicable (NA) was used for both student and faculty evaluation forms. Students raw scores were reported based on local or remote sites. Students and instructors were asked to rate a series of twenty evaluation questions including instructional design questions.

Table 1 reports the evaluation raw scores for students enrolled in an instructional strategy course for teaching children with learning disabilities. The local site was at the University of South Florida (USF) which served as the broadcast site while the remote site was approximately 90 miles away. There were 20 students enrolled at the local site

and 15 students at the remote site. Data is reported that reflects the opinion of students at both the local and remote sites

Table 1
Instructional Methods (Students Evaluations)
2 Sites (n=20 local/15 remote)

	Local Site						Remote Site				
Evaluation Question (Modified)	**4**	**3**	**2**	**1**	**NA**		**4**	**3**	**2**	**1**	**NA**
Students at all sites can participate…	15	4	1				10	4	1		
Instructor provides opportunities for in class participation….	13	6	1				9	3	2	1	
Instructor provides advisement opportunities outside of class….	14	6					14	1			
Course has been adapted for DE…..	12	5	2	1			12	2	1		
I enjoyed taking this class….	12	7	1				11	2	2		
It is easy to participate in this class…	13	4	2	1			13	1			
The technology is properly utilized…	18	1	1				13	1		1	
Class moves slowly due to the technology…	5	3	2	10			11	2	1	1	
Course is well-suited for DE…	18	2					10	3	1	1	
Instructor pays more attention to other site…	1	6	8	5			2	4	4	5	
Compare to other DE classes I have taken, this class is outstanding….	3	2		1	12		8	5			2
Compared to other DE instructors, this instructor is outstanding…	3	2		1	12		8	5			2
Instructional Strategies Used	**4**	**3**	**2**	**1**	**NA**		**4**	**3**	**2**	**1**	**NA**
Lectures without visuals were successful	12	2	3	3			8	5	2		
Lectures with Visuals were successful	13	4	2	1			10	4	1		
Whole class discussion was successful	10	4	5	1			5	4	5	1	
Small group discussion was successful	14	3	1	2			13	2			
Student presentation was successful	15	2	1	2			11	3	1		
Guest Speakers were Successful					20						15
Instructor demonstrations were successful	12	5	3				7	3	4	1	
Email Communications successful	7	4			9		7	5			3

Students in this class clearly agreed that the technology used to deliver instruction was used successfully and did not distract from learning. Students also agreed that this type of class is well suited for delivery as a distance education format. The course was well adapted to meet their learning needs for distance education. Remote students as well as local site students agreed that one site did not receive more or less attention from the instructor than the other site. This perhaps was more of a reflection of the instructor than the technology.

Several instructional strategies were used to assist the instructor deliver the course content. Overhead transparencies, videotapes, student and teacher demonstration were reported by students to be successful. This reinforces the applicability of interactive and compressed video strategies commonly used in classes. Guest lecturers were not used in this class. Due to the lack of email accounts to several students the effectiveness of email as a communication tool can not be reliability reported for this class.

Table 2 reports the evaluation raw scores for students enrolled in a knowledge-based class concerning an introduction to children with disabilities. The local site was at USF while the remote site was approximately 50 miles away. There were 35 students enrolled at the local site and 8 at the remote.

Table 2
Mean Scores: Knowledge Base(Students Evaluations)
2 Sites (n=35 local/8 remote)

	Local Site						Remote Site				
Evaluation Question (Modified)	4	3	2	1	NA		4	3	2	1	NA
Students at all sites can participate...	12	15	8				2	3	3		
Instructor provides opportunities for in class participation.....	12	11	10	2			2	1	3	2	
Instructor provides advisement opportunities outside of class....	27	6	2				4	3	1		
Course has been adapted for DE.....	15	16	4				5	2	1		
I enjoyed taking this class....	22	9	3	1			7	1			
It is easy to participate in this class...	12	13	8	2			2	2	4		
The technology is properly utilized...	25	8	2				7	1			
Class moves slowly due to the technology...	8	9	10	8			5	2	1		
Course is well-suited for DE...	12	8	8	4	3		5	3			
Instructor pays more attention to other site...	23	10	2				4	3	1		
Compare to other DE classes I have taken, this class is outstanding....	15	7	7		1		7	1			
Compared to other DE instructors, this instructor is outstanding...	12	15	3		5		5	2			1
Instructional Strategies Used	**4**	**3**	**2**	**1**	**NA**		**4**	**3**	**2**	**1**	**NA**
Lectures without visuals were successful	22	13					8				
Lectures with Visuals were successful	25	9	1				7	1			
Whole class discussion was successful	13	18	4				5	2	1		
Small group discussion was successful	25	7	2	1			4	3	1		
Student presentation was successful	23	8	3	1			3	3	1	1	
Guest Speakers were Successful	33	2					8				
Instructor demonstrations were successful	32	2	1				5	2	2		
Email Communications were successful	35						7	1			

Clearly, the size of the local site far exceeded the number of students receiving instruction at the remote site. This by itself may predispose the instructor to concentrate more on the local site. However, students from both sites agreed that this did not occur. Similarly as in Table 1, students agreed that the technology was appropriate for the delivery of a knowledge based course. Results from both local and remote sites tended to agreed that the course as presented was effective. Both sites reported strong agreement in the use of quest speakers. The remote site was 100% in agreement. The use of 2-way

interactive video/audio supports the inclusion of speakers as an effective instructional strategy whereby both parties can see and hear each other in real time.

Table 3 reports the evaluation raw scores for faculty who taught an instructional strategy course. Five instructors taught classes that were considered strategies courses such as the course cited in Table 1. A combined raw score value is reported.

Table 3
Mean Scores: Instructional Strategies (Faculty Evaluations)
N= 5

Evaluation Questions (Modified)	4	3	2	1	NA
Students at all sites can participate…	3	1	1		
Instructor provides opportunities for in class participation…..	4	1			
Instructor provides advisement opportunities outside of class….	4	1			
Course has been adapted for DE…..	3	2			
I enjoyed teaching this class….	5				
It is easy get student participate in this class…	4	2			
The technology is properly utilized…	2	2	1		
Class moves slowly due to the technology…	3	2			
Course is well-suited for DE…	3	2			
Instructor pays more attention to other site…	5				
Compare to other DE classes I have taken, this class is outstanding …					5
Instructional Strategies Used	**4**	**3**	**2**	**1**	**NA**
Lectures without visuals were successful	3	1	1		
Lectures with Visuals were successful	3	1	1		
Whole class discussion was successful	2	1	1	1	
Small group discussion was successful	4	1			
Student presentation was successful	3	2			
Guest Speakers were Successful	2				3
Instructor demonstrations were successful	2	3			
Email Communications successful	1	4			

Table 4 reports the evaluation raw scores for faculty who taught a knowledge-based class. Two instructors taught classes that were considered knowledge based courses such as the course cited in Table 2. A combined raw score value is reported.

Table 4
Knowledge Base(Faculty Evaluations)
N=2

Evaluation Questions (Modified)	4	3	2	1	NA
Students at all sites can participate...	2				
Instructor provides opportunities for in class participation.....	1	1			
Instructor provides advisement opportunities outside of class....	1	1			
Course has been adapted for DE.....	2				
I enjoyed teaching this class....	2				
It is easy to get student participation in class...	1	1			
The technology is properly utilized...	1	1			
Class moves slowly due to the technology...	1	1			
Course is well-suited for DE...	1	1			
Instructor pays more attention to other site...				2	
Compare to other DE classes I have taken, this class is outstanding....					2
Instructional Strategies Used	**4**	**3**	**2**	**1**	**NA**
Lectures without visuals were successful	2				
Lectures with Visuals were successful	2				
Whole class discussion was successful		2			
Small group discussion was successful	2				
Student presentation was successful	2				
Guest Speakers were Successful	1	1			
Instructor demonstrations were successful	2				
Email Communications successful		2			

Table 3 (methods class) and 4 (knowledge class) reported the self-evaluation data from all instructors. Instructors seem to be in agreement that the courses that they taught were well adapted to a videoconferencing format. Instructors also reported that the attention given to local students was approximately the same as given to remote students The raw scores from students support this premise. A more active learning approach to teaching was supported through the use of student interactions, visual aides, and quest speakers. To the instructors that taught the seven pilot classes, it does not appear to be an issue as to the type of class that was presented. All classes taught seem to be adapted to a videoconferencing format at least in the opinion of the instructors.

Discussion

Distance education is an increasing dimension at universities for the delivery of instructional services. As more and more students apply for admission to four year and community college programs, the need to serve these students becomes not only an economic factor but a political factor as well. Videoconferencing is perhaps the nearest form of distance education that approximates traditional on campus instruction. Whether it should or not is an extensive philosophical and statistical debate yet to be resolved. The development of emerging technology including telephony and fiber optics has provided a more cost reasonable approach to distance education. In addition, the costs of the videoconferencing hardware and codecs have been decreasing and probably will continue to do so with increased volume and by competition.

In view of the limited data reported for seven videoconferencing classes, the pilot has provided the baseline for continuation of the program. Several factors seem to support or contribute to the success of the pilot program. In particular the use of videoconferencing, the pre-planning, training and facilitation, and the collaborative grassroots organization and support for the program were critical factors. In addition, reasons as to why students enroll in videoconferencing class should be considered in the evaluation and construction of videoconferencing programs.

Collaboration and Local Support:

It seems that for new an innovative programs to develop and be successful, a supportive grassroots effort must be demonstrated. The Greater Tampa Bay Special Education Consortium has demonstrated the collaboration needed to support new

programs (Churton, et. al., 1997). The use of videoconferencing learning centers for remote access to university courses is predicated on the collaboration of the remote site. Site security and facilitation are key factors in providing these services. In addition, using preexisting facilities, auxiliary equipment, and locally trained personnel reduces the total and real costs of conducting videoconferencing. The future of remote learning centers is dependent upon the continuation of program support and with cooperation in providing effective instruction for teachers and other professionals.

Pre-Planning and Training:

A particular strength of this pilot program was the extended time and effort applied to pre-planning and training of those individuals involved with the delivery of instruction. Course selection is also a key aspect for videoconferencing. The advantage of videoconferencing is the two-way interactive communication between instructor and students and among students themselves. Methods based courses by nature require interaction and demonstration by students and instructors. Knowledge basic classes demand more active learning strategy approaches by instructors to fully take advantage of videoconferencing. Both types of classes however can be successful when instructors and assistants are trained to encourage interaction and to understand the advantages and limitations of the technology.

Faculty development is critical for successful videoconferencing and perhaps poses the biggest dilemma for universities. How do you finance faculty development, especially in the technology area and with limited fiscal resources? Who supports the release time needed for faculty to learn the skills and strategies of videoconferencing. The pilot program relied on faculty who "volunteered" their time to develop the skills for

videoconferencing. This certainly contributed to the motivation of the instructors. Seven faculty members participated in a 40 hour training program over the course of one semester, typically on Friday and Saturday periods. They received no remuneration or release time for this participation. However through a university technology committee, criteria have been added for tenure, promotion, and merit consideration that would include learning and using technology for instructional purposes. In addition, the training of remote site facilitators is also a consideration for developing programs. Knowledgeable individuals concerning technology and class facilitators are important skills to assist class instructors.

Class Structure and Interests Considerations:

Several delimitation's in offering distance education can be noted. Students enroll in classes for a variety of reasons thus bringing to each class a different attitude or level of motivation for participation and completing the class. Students with varying degrees of motivation in a class may well report the acceptance or rejection of videoconferencing differently. Students may be taking classes as part of their graduate degree program, initial certification requirements, or for completing their recertification requirements. Would students evaluate classes differently if they chose to take the class based on job security, employment, love or learning, or due to their enrollment status? These are important and critical questions when developing and evaluating any program, but especially in a new area such as videoconferencing.

A third dimension is the schedule for which classes are offered. Of the seven classes offered, six were offered on a weekend format while the seventh was on Tuesday evening for 16 weeks. In a previous needs assessment, over 95% of working teachers

indicated that a weekend format better met their professional and personal schedules. In any class, the motivation of students is a key factor in the manner in which student evaluate programs. Students in a class that conflicts with their teaching schedule or planning, or continues for 16 weeks may not evaluate the program as positively as a class which more conveniently meets their priorities. However, this did not seem to be the case in this program.

Summary

The DIALs pilot program has proven to be an effective means for delivering instructional content to remote areas of the region. To continue the program, increased training opportunities for faculty, facilitators, and technologists must be provided and funded appropriately. The use of videoconferencing requires extensive planning and human resources for instruction to be effective. Importantly, the local grassroots collaboration of schools and agencies and their personnel must be forthcoming to facilitate the coordination of programs and activities. Videoconferencing learning communities' allow for educational opportunities previously denied. In addition, the varied use of videoconferencing provides additional opportunities for schools, communities, and governmental agencies to increase the viability of information and resources to remote locations.

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